CLIC PAPERS

LOGISTIC SUPPORT FOR LOW INTENSITY CONFLICT AN AIR FORCE PERSPECTIVE

Army - Air Force Center for Low Intensity Conflict

Langley Air Force Base, Virginia

LOGISTIC SUPPORT FOR LOW INTENSITY CONFLICT

AN AIR FORCE PERSPECTIVE

by

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PREFACE

This document examines low intensity conflict (LIC) logistics from a US Air Force perspective as seen through the eyes of a Royal Air Force exchange officer. As such, it is based on the US Air Force doctrine discussed in Air Force Manual 1-10, Combat Support Doctrine, which has been translated into English and applied to the low intensity conflict environment. The author accepts full credit for all translation errors and hopes the document will further Anglo-American understanding.

The paper is aimed at operational and logistics staff at all levels of command. Its purpose is to provoke thought on the doctrinal issues associated with providing logistic support during LIC. The paper briefly looks at the cause and effect of LIC using insurgency as a model. It examines some of the principles of logistics as applied in the LIC scenario and then outlines how the logistic support processes might be applied to resources. Finally, it touches on some issues that should be addressed when providing aid to allies in the LIC scenario.

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LOGISTIC SUPPORT FOR LOW INTENSITY CONFLICT

AN AIR FORCE PERSPECTIVE

INTRODUCTION

Low Intensity Conflict (LIC) is a complex and often subtle form of warfare that presents unique logistic challenges. The basic logistics doctrine set out in AFM 1-10, Combat Support Doctrine, is valid in LIC but must be adapted to the peculiar demands of the environment. The aim of this paper is to explore how this basic doctrine should be adapted to the LIC scenario. The paper briefly looks at the cause and effect of LIC using insurgency as a model. It examines the principles of logistics most relevant in the LIC scenario and outlines how the logistic processes should be applied to resources. Finally, it touches on some issues that need to addressed when providing aid to allies.

Low Intensity Conflict. In simple terms, LIC is a limited politico-military struggle to achieve political, social, economic, or psychological objectives. It is often protracted, and its prosecution ranges from diplomatic, economic, and psychosocial pressures through terrorism to insurgency. It is generally confined to a geographic area and is often characterized by constraints on the weaponry, tactics, and the level of violence.

In the "spectrum of conflict," LIC occupies the range from violent peace to a subjective middle ground short of general conventional war. However, it is important to remember that for the factions involved, the small war we euphemistically call "LIC" could be a struggle for survival.

Insurgency. The predominant form of LIC is insurgency which is an organized movement aimed at the overthrow of a constituted government through the use of subversion and armed conflict. Insurgency can result in changes to the political alignment of countries and, thus, represents a significant threat to US strategic interests throughout the world. Insurgency is rarely a struggle between "good guys and bad guys" because it is usually the potential effect on US interests that determines whether a conflict is seen as a struggle for freedom or a revolutionary war and whether the insurgents are regarded as terrorists, guerrillas, or freedom fighters. There are other forms of LIC, but insurgency, perhaps, provides the best model for exploring the nature of LIC and for examining the main doctrinal issues relating to logistic support operations.

Many areas of strategic interest to the US lie in the so called Third World. These countries are often characterized by factors that can make them vulnerable to insurgency. In essence, insurgency is a struggle between the insurgents and the

government for the support of the people. Over the long haul, insurgency cannot be sustained without this support nor can the government remain in power without the consensus of the people. Thus, the insurgents' campaign is aimed at undermining support for the government while building or coercing support for their own cause. There is no fixed pattern to insurgency. But, typically, the insurgents would seek to exploit the root causes of discontent in the country in a campaign that, where successful, escalates from passive pressure to open conflict against the government forces and the eventual seizure of power. The insurgents campaign could be prosecuted over many years, and as their fortunes waxed and waned, their campaign could move up and down through the levels of violence several times.

Insurgency exploits internal unrest in a combined political, social, and military assault on the government and its popular support. Therefore, to prevent or defeat insurgency, the government must resolve the root causes of discontent, retain the support of the people, and defeat the insurgents on political, social, and military levels.

All these components are necessary for a lasting solution. A military victory alone can rarely defeat insurgency. At best, it provides a climate for finding a lasting political and social solution. Finally, in this struggle for the support of the people, the prosecution of the campaign against the insurgent must not alienate the support of the people for the government.

Insurgency plays a significant role in the strategic struggle between western democracies and the forces of Communism. Insurgency is often sponsored by external powers who provide aid to the insurgents in the form of advice, training, equipment, and financial backing. It offers the aggressor significant strategic gain for minimum resource investment with little risk of escalation to open conflict between the major powers.

The US Contribution. In resisting aggression against US spheres of interest, the US contribution to stability in the potential arenas of LIC could take two forms. First and foremost, it should assist allied client states to develop the political maturity, social harmony, economic wealth, and military capability necessary to forestall conflict. Secondly, US forces can be deployed to reinforce an ally or to remedy a deteriorating situation. Here, US intervention is not confined to SOF operations. Indeed, LIC represents only one element of the SOF role. Low intensity conflict in its most challenging form involves regular US combat forces operating for a protracted period in a client country.

The US must retain an effective capability to provide both indirect and direct military assistance to allies. It is essential for US forces to be equipped and trained for direct intervention. However, assisting allies towards self-sufficiency

reduces the likelihood of having to deploy US combat forces. This should, therefore, be the primary thrust of US efforts.

To prepare for LIC, the logistician must first understand the environment in which he is going to operate. He must study the lessons of previous conflicts, and there are many to choose from. Then, he must consider how the principles and processes of logistics should be applied to the situation.

PRINCIPLES OF LOGISTICS IN LOW INTENSITY CONFLICT

The fundamental principles of logistics in war are neither infallible nor immutable, but they provide guidance in planning and executing logistic support for operations in war. The principles identified in AFM 1-1, Basic Aerospace Doctrine, and AFM 1-10 continue to be valid in LIC, but they must be considered against the LIC environment. Some of the more relevant principles are discussed below.

Objective. For any venture to succeed there must be a clear and definitive concept of the objective. The bigger an organization, the greater the venture, the more there is a need for clear objectives. This is particularly true in the LIC environment where issues can become clouded, and objectives obscured by political and strategic considerations. United States military forces are instruments of government, and military objectives are shaped by the political aims of the government. To distill military objectives, there must first be a clear understanding of the government's objectives and constraints. Further, where government policy changes, military objectives must also be reoriented accordingly.

The same is true of logistic objectives which must be indivisibly aligned with operational objectives to achieve maximum combat power. Thus, a clear statement of operational objectives is the first requirement when formulating logistic plans. Operational objectives should embrace mission, force levels, duration, and intensity of operations. From these operational objectives, the supporting logistic objectives are derived. Thereafter, throughout the entire planning process and during plan execution, logistic objectives must be constantly reappraised to ensure they are in consonant with evolving operational objectives. If a logistic objective is not designed to support operational objectives, it is irrelevant and can be an impediment to providing effective support.

Objectives should cover all logistic disciplines and should address each of the logistic processes as applied to resources. The scope of objectives should range from strategic to tactical, for example, from procuring the right type of equipment, e.g., runway matting, to preserving that matting in theatre, to laying that matting in a jungle clearing to support forward air operations in a client country. Objectives are the foundation of

planning. They must be clearly defined, thoroughly understood by all, kept in the forefront of planning, and constantly reviewed. Each organization and suborganization must develop their objectives in support of the overarching mission objectives.

Balance. Getting the right thing in the right amount to the right place at the right time is the fundamental tenet of logistic support. In any resource constrained force, the principle of balance is closely linked to the need for economy. Logistically, balance delivers only what is needed with neither surpluses nor deficiencies. Resources are thereby conserved for use in other places and at other times. Balance helps optimize spending on weapon systems, support equipment, spares, and munitions to deliver supportable combat forces.

Equally, balance must be applied to allocating resources to prepare for the different forms of conflict in which US forces could become embroiled. Where the materiel requirements for LIC cannot be met from resources primarily procured against the threat of high intensity and nuclear war, the principle of balance must be applied. Similarly, a force trained and equipped to fight only in high intensity or nuclear warfare is not likely to perform effectively in LIC because it is an unbalanced force. The threat of LIC, its immediacy, and its implications for national interests must be weighed against the threat of global war. Balance must then be used in allocating resources to meet the respective threats.

Effectiveness. Low intensity conflict is often characterized as the "violent peace" since it occupies that part of the spectrum of conflict short of conventional war. As such, the policies and procedures affecting expenditure, accountability, and resource allocation owe more to peacetime constraints than to wartime procedures. Cost effectiveness and peacetime efficiency can be allowed to predominate over mission effectiveness. Yet, LIC is war, and to win wars, mission effectiveness must be the paramount concern.

Consequently, despite the constraints of peacetime, every effort must be made to maximize mission effectiveness. First, commanders must accept the gravity of the threat presented by LIC. Second, they must plan to meet the LIC threat in all potential arenas. Next, equipment and weapon system needs must be assessed, procured, and evaluated. Finally, plans must be constantly tested, exercised, and refined until people, equipment, and weapon systems become a single entity tailored to deal with the LIC threat within each environment.

Control. The effective use of logistic resources depends upon being able to exert control over those resources. The what, where, and how many may be the cornerstones of materiel management. Stock and inventory management systems are essential features of accounting for assets. However, such systems only

contribute to effective logistic control in combat, if it is possible to extract data from them in the form of critical information. Data must be retrieved, distilled, and converted into the critical information needed by the commander in time to make decisions. Extraneous data must be discarded. The commander must not be inundated with noncritical information.

There are many resource management systems in the US Air Force. These systems are often very complex and usually dependent upon sophisticated automatic data processing (ADP) and communication facilities. In LIC, these complex management systems may have to interface with relatively unsophisticated systems at the tactical level where the campaign is being fought. Here the danger is twofold; first, of swamping the tactical systems with noncritical data and second, with overtaxing the field commanders with demands for data. The former leads to loss of control of resources, and the latter detracts from the field commander's ability to support the campaign. External and internal system interfaces and the flow of information must be regulated to allow the field commander to retain control of his resources. The logistics command, control and information systems must be designed to refine raw data into the time and mission critical information needed by the commanders.

Flexibility. To meet the LIC challenge, US forces must be prepared to fight in any of the many potential LIC arenas. Flexibility is needed to operate in all climates, over differing terrain, against an array of potential adversaries, and in cooperation with differing allies.

Flexibility is a characteristic of air power, and, in LIC, this ability to reach out and strike the enemy anywhere at anytime is its greatest virtue. Flexibility must also be made a characteristic of logistic support for air operations in LIC. Supply, maintenance, and transportation system must be flexible enough to operate within each LIC environment. Systems must be modified, interfaces created, new systems devised, and people trained to adapt the standard systems to the demands of LIC.

Synchronization. Synchronization brings together all the elements of logistic support at the right time and in the right place to allow the effective application of combat power to achieve an objective. It involves all elements of logistics interacting in the delivery of firepower to destroy the enemy.

In LIC, the enemy rarely concentrates his forces. Consequently, opportunities to apply firepower effectively may be few and far between. Logistics support must be synchronized to put the right type of aircraft within range of the target in time to hit the enemy. The aircraft must be serviceable and have sufficient fuel, and the weapons must be of the right type to destroy the particular target. Timing is crucial as the objective is to hit the enemy, not to hit where the enemy was

yesterday! If logistic support commanders cannot meet this fundamental requirement, they are constraining the effectiveness of the combat arms.

Cohesion. Low intensity conflict will almost invariably involve joint service and combined operations. Cohesion is essential for meshing together the logistic support efforts of each service and allied nations to realize the benefits of joint and combined support operations. Internally, the efforts of operations and logistics staff must be cohesive. An operational plan that ignores logistic constraints will fail, and logistics effort not linked to operational objectives is wasted. Cohesion avoids duplication and omission. It uses the strengths of one organization to cover weakness in another. It helps optimize resource allocation and shares expertise. Finally, it binds the force to a common purpose under unified leadership. Cohesion can only be achieved through joint planning, joint training, and joint experience. Only by operating in the joint and combined arena can single services and nations learn the mutual trust and respect for brothers-in-arms needed for true interservice and combined nation unity of effort.

Simplicity. The fog and friction of combat can make simple tasks seem difficult. The enemy in LIC is often difficult to discern against the indigenous population. This, and the characteristically joint and combined nature of operations in LIC, can make the potential for confusion very high. Simplicity in planning and execution promotes understanding and combats confusion. Almost invariably, the simple way of meeting an objective is the most effective way. The simple plan is readily understood, more easily executed, and can be more easily adapted to changing circumstances. Simplicity in logistics is achieved by standardizing equipment between services and allies to ease the maintenance and resupply task. Similarly, simplified joint and combined procedures promote easier interservice cooperation. Simplicity engenders better force cohesion, greater operational flexibility, and optimum mission effectiveness.

Unity of Command. Low intensity conflict will involve joint and combined operations, and for these to succeed, the force must operate under a unified command structure. To maintain direction and impetus in an uncertain situation, the force must have coherent and unified leadership. Only a single chain of command can provide the unambiguous leadership, clarity of purpose, and unity of effort needed for successful operations.

Maneuver. One of the greatest contributions air power can make in the LIC environment is force mobility. Operations in LIC will usually involve seeking out and destroying an elusive enemy on his own ground. Air power offers the capability to reach out and rapidly deliver ground forces to the combat zone and to keep those forces resupplied throughout the operation. The logistic support for such operations must be configured to enhance force

mobility. The equipment needed to support mobile operations must be procured. The basing strategy, disposition of supply and refueling nodes, in-theatre maintenance philosophy, and internal resupply lines must all be designed to optimize the ability to maneuver forces.

Security. An important aid to defeating the enemy in LIC is to deny them access to weapons, ammunition, fuel, and food. A potential means of their acquiring such materiel is to attack US and allied supply bases and lines of communication. Stocks of materiel must be protected both in storage and in transit to protect them for allied use and to deny them to the enemy.

Economy. In its role of world policeman, the US could become involved in many theatres of operation simultaneously. Yet, the resources of the US are not infinite so economy must be applied to maintain a viable posture within fiscal and manpower constraints. To procure all the resources needed for every foreseeable contingency plan would be prohibitively expensive. Therefore, hard political and military decisions must be made on the number of operations that can be supported concurrently both within a given theatre and on a global scale. The requirements for resources for each plan for all services must be aggregated and rationalized to identify an optimum pool of resources needed to support a range of concurrent operations. As the cost of weapon systems rise, the more there is a need for economy.

COMBAT SUPPORT PROCESSES

Air Force Manual 1-10 sets out the basic doctrine for logistic support of combat operations. It describes the eight logistic processes depicted below and explains how these should be applied to resources in terms of people, facilities, materiel, and information.

Process	Resource
Definition	People
Acquisition	
Maturation	Facilities
Distribution	
Integration	Materiel
Preservation	
Disposition	Information

The process-people concept set out in AFM 1-10 is a valid means of addressing all aspects of planning, deploying, and executing logistic support for combat operations in any scenario. By carefully and thoughtfully applying each process, the logistics community can ensure optimum value is derived from each of the four resources. This paper seeks to outline how some of these processes might be applied in LIC. The application of the processes to the four types of resources is examined in turn.

People. The definition process specifies the requirements for logistics personnel to support LIC contingency plans. It addresses both the number of personnel and the skills required. From the plan parameters and decisions on concurrency, the requirement for logisticians to support LIC contingency plans at tactical, theatre, and global level can be calculated. In applying the acquisition process, personnel must be selected and trained to operate effectively in the LIC environment. This will incur a considerable training penalty. Only by earmarking people for LIC operations can training be concentrated on these personnel to achieve maximum mission and cost effectiveness.

Training provides the basic skills needed, but the maturation process must be applied to develop these skills. Personnel must learn how to operate with the other services, and this can only be done under field conditions. To operate effectively with foreign allies, key logistics personnel must be familiar with the language, culture, and socio-economic conditions of the country. They must develop an understanding of local business practices to gain expertise in contracting local services, establishing local sources of supply, and hiring local labor. When assisting or advising allies, they must have a thorough understanding of US security assistance programs. Finally, they have to develop a thorough understanding of the logistic constraints imposed in LIC. Given training and experience, the logistician develops the high level of competence in the special skills needed to support combat operations in LIC. The process is one of continual refinement through experience, and it can take many years to develop the wide range of skills needed to operate effectively in a LIC environment. If force effectiveness is to be maintained at a high level, key personnel should be retained in duties relating to logistics support in LIC throughout much of their careers.

The distribution process deploys and positions personnel to achieve maximum combat effectiveness. In preparing the potential battlefield, logisticians must first be deployed to reconnoiter the logistic situation and to arrange host nation support. When plans are being executed, logistics personnel should deploy to client countries in advance of combat forces wherever the situation permits. The early positioning of logistics personnel is essential to tap local resources, establish and invoke host nation support agreements, and generally prepare for the beddown of deploying combat forces. Such personnel should be well versed in the client environment and be equipped with the authority and resources needed to do the job.

The integration process meshes together the logistics efforts of single services and nations to achieve synchronized support of operations. United States Air Force personnel must work with logisticians of other services and allied forces to produce integrated logistic support plans and procedures. Similarly, there must be continuing and close cooperation between

logistic and operational staffs throughout the planning cycle to develop plans that both meet the operational requirement and can be supported logistically. Effective integration can only be achieved during plan execution if the joint and combined force is organized under unified leadership. At all levels, single service logistic activity should be integrated with those of other services. Activity within maintenance shops, supply warehouses, motor pools, and administrative centers should be rationalized. Similarly, cross utilization of like skills should be encouraged where practical. Real economies in manpower requirement can be realized by integrating like functions between services. In supporting the operational mission, the logistics organization must be unified to realize the synergy of mutual support, effective control, and optimum use of resources.

When contingency plans are implemented, the preservation process protects personnel in the field. To maintain maximum force effectiveness, losses through disease, injury, and stress must be minimized. Logistic plans supporting deployments to foreign environments where disease is endemic must include arrangements to protect the individual. The need for preventive medicine, sanitary arrangements, and personal education must be considered. Where the climate is inhospitable, forces may need to be acclimated before going into action. The demands of combat can be such that peacetime safety-at-work rules may have to be ignored. Relaxation of safety rules should be controlled and only implemented where operationally necessary.

The human resource is the most valuable component of a force and the maintenance of morale can determine how well that component functions. The restoration process safeguards and regenerates the morale, health, and motivation of the force. Logisticians play a major role in this process by feeding, accommodating, maintaining, and equipping the force for LIC. Forces in the field can readily accept hardship and privation in combat, but, when these are a product of indifferent logistic planning, the motivation and well-being of the force suffers. Logistic planning must pay particular attention to human needs for they critical considerations when fielding a well equipped and highly motivated force.

Contingency plans must be constantly reviewed to ensure mission objectives, planning assumptions, and parameters are still valid. Force requirements can vary, and, thus, the number of logistic support personnel can change. The disposition process must be applied to keep the logistic manpower commitment in consonance with plan objectives and allow the reassignment of surplus personnel. In the field, the rapid evacuation of sick and wounded personnel enhances force morale and contributes to regenerating force levels. In this sense, planning must address the disposition process to provide for the removal of casualties from the combat zone and their evacuation to hospital facilities in theatre or in CONUS. Also, operations in LIC could involve

the evacuation of US and foreign nationals from the combat zone. Where this is likely to occur, the disposition process must again be applied to collect, transport, and disperse evacuees.

Facilities. The logistic preparation of the battlefield must identify the host nation facilities that would be available to deploying US forces in the event of combined operations. Facilities include all types of infrastructure that could be used to support a force. Domestic and technical accommodation, ports and airfields, railways, canals and roads, fuel, ammunition and general purpose storage facilities, and water and sewage facilities are some examples of the facilities to be assessed. The quality, quantity, and capacity of such facilities determine their utility when deploying and sustaining the force. Maximum use must be made of host nation facilities to minimize US capital investment and to reduce the volume of equipment to be deployed.

In applying the definition process, the requirements for facilities both during force deployment and sustainment must be considered. Low intensity conflict can arise suddenly, but the lead time involved in constructing facilities can be lengthy. Therefore, realistic and timely definitions of requirement are the first essential to successful operations.

The acquisition of facilities can be achieved in a number of ways. Host nation facilities could be enhanced to improve their capacity or throughput. New facilities could be built in the host nation or mobile facilities could be procured and held in readiness for the deployment. Where facilities are being constructed or enhanced in the host nation under security assistance programs, the inclusion of the requirements to support deploying US forces should be considered. The criticality of the facility, the speed with which it could be built following plan implementation, and the potential for work-around solutions determine if and when a facility must be constructed. Many facility requirements could be satisfied by using temporary facilities, but such resources, together with the equipment to erect and maintain them, must first be programmed, funded, and procured. Runway matting, flexible fuel tanks, and portable shelters are some examples. Again, to minimize capital outlay and reduce the deployment bill, the acquisition of resources must be coordinated with other services.

Facilities contribute to the effectiveness of the force, but only if they are tested for adequacy, and personnel are trained in their operation. In this maturation process, facilities must be operated and evaluated under field conditions to determine whether they are compatible with prevailing climatic conditions and operating requirements. Potential deployment areas may be subject to extremes of weather. The effects of tropical rains, extremes of temperature, and high winds on the life span and utility of facilities must be evaluated. Similarly, planned sites for facilities in the host country must be checked for

suitability. Load bearing, drainage, accessibility, and security must be considered. Facility design and positioning must be modified and requirement calculations refined in the light of field experience.

The distribution process is used to store temporary facilities in optimum positions around the world ready to meet the requirements of LIC or high intensity war. There will be insufficient resources to disperse stocks to all potential areas of employment, and balanced judgment must be applied to achieve the best distribution. Some prepositioning may be possible, but the overall shortfall in resources must be compensated for by being able to rapidly deploy what stocks there are to the point of employment. Logistic control systems must maintain visibility of assets, and contingency plans must include sufficient details of the facilities required to permit rapid identification, location, issue, and deployment of stocks.

While the needs of individual services might be broadly similar they can vary in detail. In applying the integration process, these varying requirements must be rationalized and standardized as far as possible. The choice and design of facilities should accommodate the requirements of all services. For every type of facility, the requirements of the individual services must be integrated to minimize capital expenditure and to achieve maximum utility from facilities.

Facilities built or held in reserve for contingency plans must be maintained in a serviceable condition. Here, the preservation process is applied to keep facilities ready for plan implementation and protected during plan execution. Permanent and temporary facilities must be inspected and maintained. Some temporary facilities such as flexible fuel tanks are prone to decay. Others have mechanical components that must be maintained. Where facilities are preserved in component form or are inhibited and otherwise protected, the time taken to strip, clean, assemble, and prepare for service must be added to deployment time. To ensure facilities are held preserved for contingency plans, the assets must be earmarked against the requirement to ensure they are not diverted to other uses inadvertently. In the field, facilities can be critical logistic assets and key links in the support chain. As such, they must be protected from sabotage or attack.

Facilities become obsolete or wear out with use and must be disposed of. Similarly, when an operation has been completed, the disposal of facilities is a major aspect of restoring the battlefield to normality. The disposition process must be applied to ensure such assets are released for other commitments, sold out of the service, cannibalized, or scrapped. A primary consideration is cost. Where the cost of dismantling and recovering deployed facilities exceeds the capital cost of purchasing replacements, such facilities should be disposed of

locally. Where the facilities can be of use to the host nation for civil or military purposes, they should be sold or transferred to them. Where facilities have no further use or are beyond economic repair, they must be dismantled, cannibalized for useful components, and disposed of as scrap. Where the recovery of facilities is economically viable or operationally essential, they must be returned for storage in theatre or in CONUS. Such facilities must be dismantled and cleaned before being returned to a depot for refurbishing and storage.

Materiel. Materiel encompasses all types of equipment needed to support forces in combat. This includes weapon systems, support equipment, spares, consumables, and personal equipment. Generally, the materiel inventory of the US Air Force is shaped by the requirements for high intensity war, but these resources would also be used for operations in LIC. However, the nature of LIC warfare can demand specially designed or modified materiel not available in the inventory. The choice of air weapon systems can be constrained by many factors. Physical limitations on base facilities and runways can dictate the type of aircraft employed, the need for tanker support, and the concept of air operations. The weight of world opinion can be an important factor in the propaganda war and can constrain the use of some weapons. The need to maintain the support of the populace can dictate the need for weapon systems that can strike the enemy without collateral civilian casualties. These and other factors such as climate, terrain, and enemy capabilities can all have a profound effect on the materiel needs for LIC.

In applying the definition process, the particular materiel requirements for each contingency plan must be determined. Wherever possible, in-use equipment should be specified, but only where it is an adequate and economic solution to the requirement. Where special equipment is needed, the specification must detail the desired operational capability, the environment in which the equipment is to operate, the concept of maintenance, the urgency of need justification, and the number of equipments needed. When the requirement has been specified, it must be submitted through the programming and budgetary process to compete for funds for development and procurement.

The acquisition process must be applied to earmark and procure the materiel requirements for LIC. Materiel procured for high intensity war should also be made available for use in LIC provided this is not detrimental to the readiness posture of the US Air Force. Materiel holdings and the speed with which they could be recovered from a LIC need to be considered in this calculation. Where there are materiel requirements that cannot be satisfied from inventory resources, these must be procured with due regard to operational requirement, urgency of need, and economy. Despite careful planning and intensive research and development, the conduct of LIC will reveal shortcomings in existing materiel resources, and the acquisition process must be

made capable of reacting to urgent unforeseen requirements. During plan implementation, local resources should be used as much as possible, and contract and requisition regulations and procedures must be made flexible enough to permit maximum exploitation of local resources.

Equipment reliability and ease of maintenance are of paramount importance. Stocks of equipment specially procured or modified for LIC may be limited, and, thus, the impact of unserviceable equipment can be severe. Further, support facilities, particularly at forward operating bases, may be rudimentary. The loss of systems due to these factors can significantly degrade the operational effectiveness of the deployed force. Weapon systems and support equipment must be so designed such that they will function despite rough handling, adverse climatic conditions, and with degraded support facilities. Faults must be easily traced and readily rectified without the need for sophisticated external test facilities. Reliability and maintainability must be key features of equipment specification during the definition and acquisition processes.

The maturation process must be applied to equipment to test its effectiveness and to reveal shortcomings in its performance. The design and development of equipment is a an ongoing process of testing, evaluating, and modifying to produce optimum performance in the operational environment. Moreover, the maintenance and supply support of equipment must also be matured to develop the best concept of repair and to generate spares consumption patterns from which optimum spares stocking can be derived. The maturation process must be applied to produce robust, reliable systems that can be maintained and supported under operational conditions in the potential arenas of employment in LIC.

The use of materiel as an effective component of combat support depends upon the flexibility and efficiency of the distribution process. Distribution systems are employed to locate, issue, and transport materiel from industry, depot, and forward stores to the end user and to recover materiel into the repair cycle. In LIC, the standard US Air Force materiel distribution systems must be made flexible enough to interact with the systems of other services and the host nation. Lines of communication must reach into the host nation and forward to the combat zones. Strategic communication and ADP systems used for materiel distribution must be made capable of interacting with the systems being employed at the tactical level including the forward combat zones. In reviewing the validity of standard systems in LIC, the prevailing in-country conditions must be considered. Physical lines of communication from points of debarkation to the in-country storage facilities and on to the forward combat zones can influence transportation systems used. The suitability of containerized or palletized shipping methods may be affected by host nation facilities. The lack of internal

road and rail links can necessitate the use of tactical air transportation, but inadequate airfield facilities can constrain the type of airlift used.

Force disposition, speed, and responsiveness of the transportation systems and the in-country maintenance philosophy will dictate the optimum spares stocking posture. Stock levels at forward, intermediate, and rearward facilities should be sufficient to support operations and sustain realistic resupply pipeline times, yet be responsive enough to react to abnormal consumption patterns. The need to prestock equipment in country must be considered, and decisions must be made on which materiel should be pulled from depot as requirements arise and what should be pushed to the theatre in anticipation of requirements. Maximum use should be made of indigenous resources particularly where high volume bulk items are concerned, and, where possible, materiel resources should be pooled with other services and host nation forces.

When reviewing the validity of standard logistic distribution systems in LIC, it must be recognized that US forces could be operating over extended lines of communication without the benefit of intermediate basing facilities and into host countries with negligible logistics infrastructure and limited internal lines of communication. The unique and often primitive operating conditions sometimes found in LIC can render sophisticated distribution systems unworkable. Logisticians must address the potential problems and plan accordingly.

As with other resources, US Air Force materiel, materiel management, and transportation systems should be integrated with those of the other services and the host nation where practical. Where possible, the materiel used by individual services should be standardized. The use of common ammunition, standard vehicles, and similar support equipment can ease the logistic support burden. By applying the integration process in this way, maximum cost and manpower savings can be derived, and the overall logistic effectiveness can be improved. Generic materiel resources such as fuel, food, and transport should be supplied and managed by a single service on behalf of all. Similarly, common user equipment should be pooled and operated as joint resources. In country, the transportation system must be joint to achieve coherent and efficient operations. To economize on support equipment, materiel maintenance activity must be pooled where practical.

The preservation process is essential to maintaining materiel resources ready for instant deployment. Stocks of materiel held against contingency plans must be protected from consumption, decay, and obsolescence. Reserve stocks must be maintained within working-stock levels to ensure materiel is available for deployment should a contingency plan be implemented. Materiel must be physically protected when in

storage against theft, corrosion, and decay. Stock records must reflect shelf life, special storage conditions, and preventive maintenance requirements, and stock must be husbanded accordingly. Similarly, materiel must be modified, updated, or replaced as necessary to guard against obsolescence. Where materiel is prepositioned in the host country, or during operations, packaging must be adequate to protect against the effects of climate, infestation, and to compensate for inadequate storage conditions. These factors must similarly be considered when stipulating the frequency of preventive maintenance. During operations, equipment must be protected against both natural hazards and against enemy action. Equipment must be held in hardened or otherwise protected storage, it must be dispersed to at least two holding points and protected when in transit. Finally, where the combat front is fluid, forward stocks of equipment must be held ready to redeploy at short notice.

The restoration process must be applied to recover and repair unserviceable or damaged resources and to maintain materiel in a serviceable condition. The speed with which equipment is regenerated can have a significant impact on mission capability. The availability and disposition of trained personnel, servicing support equipment, and spare parts determine the recovery capability. The maintenance philosophy, the positioning of servicing rigs, the stockpiling of spare parts and war consumable must be so configured as to support the in country concept of operations.

The disposition process must be applied to ensure materiel resources remain adequate for the mission. Surplus resources must be disposed of as well as equipment no longer suitable for the task. Many factors such as changes to enemy capability, technological advances, and cost effectiveness considerations must be taken into account when applying the disposition process. Plans must be reviewed regularly to ensure earmarked materiel resources are still valid. Equipment that has become obsolete in a high intensity scenario may still have utility in LIC.

Information. Information is the foundation of logistic management systems which depend upon accurate and timely tracking of resources for the day-to-day management of assets. Critical information is information needed by the logistic commanders at all levels of command to support decision making in the execution of logistics command and control (Log C2), the mechanism for controlling the deployment and employment of logistic resources.

The definition process is applied to information to determine what needs to be gathered for Log C2 purposes. Much of the information requirement can be predicted, for example, stock holdings of fuel, munitions, and critical line replaceable units, or the serviceability state of weapon systems and support equipment. Such information requirements must be predetermined and reported regularly to the logistic commanders at all levels

throughout the operation. However, much of the information required will be situation driven and, thus, cannot be foreseen. Here, the logistic commander must be able to rely upon an assured and responsive Log C2 system to provide the information. The information requirement at all levels of command must be defined in the planning process.

The acquisition process is the means by which information is gathered. Much of the information required for Log C2 purposes will reside in standard resource management systems. Such standard systems must be flexible enough to interact with joint and combined systems. Since many of these standard systems are dependent upon ADP, they must be capable of interfacing with the systems in use in the combat zone. Rudimentary operating conditions, lack of logistic infrastructure, and inadequate communications may require modification to existing resource management systems. The logistics commander must be able to access these logistics management systems through the Log C2 system to extract needed information.

Like any process or system the operation of logistic management and command and control systems must be validated and refined under field conditions during the maturation process. While the maturation of standard systems is an ongoing process, the effectiveness of these systems in LIC depends upon how well the physical, electronic, and system links interface with the systems employed within the combat zone. These final elements in the information chain must be tested, evaluated, and refined if the information systems are to operate effectively in LIC.

The fundamental purpose of logistic support is to acquire, apportion, and distribute resources to meet operational requirements. This can only be achieved effectively if information on requirements and resources is readily available. This depends upon the distribution process which, as applied to information, is first, the process of collecting, collating, and refining data drawn from functional management systems and converting it to usable logistic information needed to support decision making. Second, it is the dissemination of logistic execution orders to effect control over the allocation of logistic resources. Every logistic function depends upon information whether it be to control transportation, direct engineering activity, track spares, distribute POL and munitions, or to manage aircraft maintenance. Information must be accurate, timely, and presented in a form that can readily be acted upon.

In LIC, the integration process is applied to information to ensure the systems being used to record, store, and transmit information in the country of operations can interact with standard US Air Force information systems. For example, the means used to record and requisition spares consumed at forward airfields must be compatible with the global supply systems to ensure rapid and responsive resupply. Data on equipment

performance in terms of reliability and functional effectiveness must continue to be gathered within the combat zone so that equipment design can be evaluated and improved. The forward combat zone represents the extremity of the information chains. The systems used there must be made compatible with theatre and strategic information systems if the information chain is to operate effectively. Systems, normally electronically or ADP based, may have to revert to manual fallback systems in austere operating conditions. Where electronic or ADP systems are deployed to the combat zone, they must be capable of interfacing with strategic systems.

Like any other resource, information must be protected and preserved. Where information is classified or sensitive, it must be safeguarded during transmission. Even where information is not classified, the volume of information being passed can indicate the level of activity to the enemy and must, therefore, be disguised. Regardless of classification or sensitivity, the "need to know" principle must be applied to all information. Access should be given only to those who need the information for the execution of the mission or task.

Information is a perishable commodity which is only an asset if it is constantly restored to keep it accurate and up to date. Further, to be of use in a combat environment, information must be readily accessed and retrieved in a form that can be readily understood. Information is essential to controlling logistic resources and, thus, information on, for example, fuel, and munitions stocks, aircraft serviceability, requisitions, and transport movements must be kept current if it is to be of use to the logistics commander.

The disposition of information in this context relates to reviewing doctrine, concepts of operation, policy, and plans to ensure they are consonant with the political and military objectives. Policies outmoded because of changed circumstances must be discarded. Where field experience shows doctrine or concepts of operation are no longer valid, they must be revised.

LOGISTIC SUPPORT TO ALLIED NATIONS

It is essential the US maintains the resources and ability to deploy forces into a deteriorating LIC scenario. However, the most effective way to protect US strategic interests is to help vulnerable nations achieve political stability by developing the social, economic, and military resources they need to combat the threat of insurgency. The logistic components of US military forces have a key role to play in this process. United States logisticians can become involved very early in a clients internal defense programs by providing advice, expertise, and materiel assistance in helping the client nation develop their resources in terms of people, facilities, materiel, and information.

People. If a military force is to be effective, it must acquire the right calibre of personnel. They must be properly trained, highly motivated, and effectively led. A force needs to be equipped with materiel, facilities, and information, but all these run a poor second to the importance of the human component. In assisting allies towards creating effective, self-sufficient military forces, the US should first concentrate on engendering the necessary human attributes in the client's forces.

Recruiting within the client country should be distributed throughout all sections of the populace to avoid tribal, ethnic, or religious schism both within the clients security forces and in labor forces directly employed by US agencies. The popular appeal and, thus, the effectiveness of the security force can be undermined if it is seen to be unrepresentative of the people. For a force to be effective, it must be properly trained. Assistance from the US, in the form of advice and training, must be tailored to suit differing environments and individual clients. Training should be tailored to match indigenous education standards, levels of technology, and the specific needs of the client. Where possible, training should be done in the client's country to ensure realism and validity. The aim must be to adapt training to local conditions rather than simply transplanting systems and procedures designed for US forces. The early training of logistics personnel is key to the development of the client's logistic system. Therefore, training of logistics personnel should have a high priority.

Facilities. Facilities within a country, in terms of social, economic, and military infrastructure can exert a significant influence on the stability, prosperity, and security of that country. Constructing roads and bridges can enhance trade and communications. Building hospitals and schools can improve social conditions, and developing industry can generate wealth for the country. The creation of facilities can provide a powerful means of combatting insurgency by removing causes of popular dissatisfaction. Further, aid in this form is tangible evidence of US support for the client and can create strong bonds of friendship between the US and client states. In many cases, US military logistic forces will be closely involved in aid programs to help the client develop facilities.

Major construction projects provide employment opportunities for the client populace and stimulate the client's economy. In poorer countries, the means of building a facility can be as important as the value of the end product. Thus, where possible, projects should use indigenous labor and local resources. Facilities should be economical and functional. Their design should allow for unsophisticated building methods using indigenous expertise and industrial resources. By using local resources, the economy is stimulated, maintenance expertise is developed, and sources of replacement parts are created for the ongoing care of the facility.

The quantity, quality, and capacity of client countries' ports, airfields, railways, and roadways can influence the effectiveness of their security forces, the type of weapon systems they require, and the disposition of their forces. Similarly, these facilities can influence the speed and means of deploying US forces, the type of weapon systems operated, and the concept of US operations. Consequently, when deploying or constructing facilities, the impact on all aspects of both indigenous and US civil and military operations should be considered and facilities designed accordingly. Wherever practical, facilities primarily intended for military use should be designed to have utility for civilian purposes. Conversely, the potential use of facilities by military forces in times of emergency should be considered in the design of civilian facilities. By designing facilities to have a dual military and civilian utility, both civilian populace and military forces can benefit, and military operations can be seen to benefit all. For example, remote airfields intended for security purposes can also be used to enhance communications and trade within the country. Where practical, such airfields should be positioned appropriately and be designed to handle civilian operations as well as to support client and US military air operations.

Materiel. The materiel requirements of client countries can be governed by many factors. Physical factors such as terrain and climate; human factors such as education standards, technology levels, motivation, and military prowess; and external factors such as world opinion, potential allies and enemies can influence the materiel requirements of a client country. When providing materiel aid to clients, the unique requirements of each environment should be recognized. United States military materiel procured against the threat of a sophisticated, high intensity war may be totally unsuitable for use by technologically unsophisticated client forces operating in a politically or militarily constrained LIC environment. Clients should be encouraged to adopt affordable, practical, and suitable systems rather than to seek expensive, hi-tech weapon systems that far exceed the operational requirements.

Materiel must match both the environment and the technical capabilities of the client. Where technology can be used to good effect, its use should be encouraged. However, sophisticated equipment can degrade the effectiveness of client forces if its support requirements are beyond the client's resources or expertise. Often, the client will have relatively few major weapon systems such as combat aircraft, and the effect of unserviceable systems will be more pronounced. Therefore, technical specifications should emphasize economy, ease of maintenance, reliability, and robustness. To all materiel resources, the tests for simplicity, supportability, sustainability, and suitability should be applied.

The management of materiel is an area often neglected in developing countries yet the effectiveness of their logistic management system can have a profound and direct impact on their combat power. The principles of logistics are fundamental, but they must be adapted to each scenario. Thus, clients should be encouraged to develop comprehensive, flexible, and forward looking logistic systems that meet their requirements and function effectively within the environment. Automatic data processing assistance should be used where practical, but caution should be used in adopting US logistic systems heavily dependent on ADP which may be too expensive, too sophisticated, or otherwise unsuitable for the client's purposes.

Information. Information in the form of propaganda can be a very powerful means of maintaining the people's loyalty to the Government. For example, the people's perception of an insurgency will dictate where their allegiance lies, and that perception will be shaped by what they see and hear. Logistics activity, whether it be in the form of employer, customer, or facility builder, will often directly affect the civilian populace. The way in which these logistics interfaces are portrayed to the people can be a significant influence in the propaganda war. The US should assist the client in developing their propaganda campaign and with establishing the means of broadcasting information to reach into all parts of the country and all sections of the populace. The information should be packaged in a way the people can understand and relate to and all means of transmitting it should be used. Newspaper and leaflet distribution systems should be established, and the populace should have ready access to television and radio receivers.

Information in the form of intelligence is a vital weapon in the fight against the insurgent or terrorist. Information on the disposition, movements, and intentions of the enemy gives the security forces a considerable advantage in the struggle. Logistics information is an important component of the overall intelligence picture. The client should be trained to interpret data on the enemies logistic bases, lines of communication, and support activity to deduce the enemies intentions. Similarly, they should be trained in screening the logistic activity of their own security forces from the enemy intelligence gatherers.

Information on resources and its use for Log C2 purposes, is the core element of the client's logistic system. Collecting, collating, and processing data on logistic resources is essential for tracking and managing resources, but an effective Log C2 system is needed to convert such data into critical information for timely decision making by operational and logistic commanders. In assisting the client with the design and development of their logistic management system, the critical importance of effective Log C2 should be stressed. Critical logistic data should be identified, and the means of capturing and transmitting it designed into the logistics system.

CONCLUSION

Low intensity conflict, primarily in the form of insurgency, presents a significant threat to US strategic interests around the world. In resisting aggression against its interests, the US should first help vulnerable allies to develop the political stability, economic wealth, and military capability to resist insurgency. However, the US must also maintain the resources and capability to deploy combat forces to assist an ally. To operate effectively in the LIC, the principles and processes of logistic support must be adapted to the LIC environment. The application of the eight logistic processes to resources in terms of people, facilities, materiel, and information provides a valid means of ensuring all the significant areas of logistic support are addressed when planning for and operating in the LIC environment.